

## CLAIMS

### WHAT IS CLAIMED IS:

1           1. An integrated circuit package comprising:  
2                 a printed circuit board having a ground ring connected to a ground plane of  
3                 the printed circuit board;  
4                 a non-metal connector attached to the printed circuit board within the ground  
5                 ring;  
6                 a metal casing substantially enclosing the printed circuit board but not  
7                 enclosing the non-metal connector, the metal casing having a metal lip  
8                 that makes physical and electrical contact with the ground ring of the  
9                 printed circuit board.

1           2. The integrated circuit package of claim 1 wherein the metal casing further  
2 comprises:  
3                 a first metal portion that substantially covers a top surface of the printed  
4                 circuit board; and  
5                 a second metal portion that substantially covers a bottom surface of the  
6                 printed circuit board.

1           3. The integrated circuit package of claim 2, wherein the second metal portion  
2 comprises a heat sink having a plurality of fins.

1 4. The integrated circuit package of claim 2, wherein the first metal portion makes  
2 electrical contact with a first perimeter ground ring on the top surface of the printed  
3 circuit board, the first perimeter ground ring substantially circling the top surface of the  
4 printed circuit board, the first perimeter ground ring being electrically coupled to the  
5 ground plane.

1 5. The integrated circuit package of claim 4, wherein the second metal portion  
2 makes electrical contact with a second perimeter ground ring on the bottom surface of  
3 the printed circuit board, the second perimeter ground ring substantially circling the  
4 bottom surface of the printed circuit board, the second perimeter ground ring being  
5 electrically coupled to the ground plane.

1 6. The integrated circuit package of claim 5, wherein the first perimeter ground  
2 ring is coupled to the second perimeter ground ring by a plurality of vias spaced  
3 intermittently around the first and second perimeter ground rings.

1 7. A transmitter comprising:  
2 a printed circuit board having a top surface and a bottom surface, the top  
3 surface having a first perimeter ground ring, and the bottom surface  
4 having a second perimeter ground ring, the first perimeter ground ring  
5 substantially circling the top surface of the printed circuit board, the  
6 second perimeter ground ring substantially circling the bottom surface  
7 of the printed circuit board;

8 a first metal casing substantially covering the top surface of the printed  
9 circuit board, the first metal casing being in electrical contact with the  
10 first perimeter ground ring; and  
11 a second metal casing substantially covering the bottom surface of the  
12 printed circuit board, the second metal casing being in electrical  
13 contact with the second perimeter ground ring.

1 8. The transmitter of claim 7 further comprising:  
2 a plurality of vias electrically coupling the first perimeter ground ring with  
3 the second perimeter ground ring.

1 9. The transmitter of claim 7 further comprising:  
2 a ground ring on the top surface of the printed circuit board;  
3 a non-metal connector coupled to the top surface of the printed circuit board,  
4 within the ground ring, wherein the first metal casing surrounds a  
5 perimeter of the non-metal connector and makes electrical contact with  
6 the ground ring.

1 10. The transmitter of claim 7, wherein the second metal casing has fins and  
2 serves as a heat sink.

1 11. The transmitter of claim 7, wherein the first metal casing at least partially  
2 overlaps a perimeter of the second metal casing.

1           12. The transmitter of claim 7, wherein the second metal casing at least partially  
2 overlaps a perimeter of the first metal casing.

1           13. A method of reducing EMI from a transceiver, the method comprising:  
2           attaching a non-metal connector to a printed circuit board having a ground  
3           ring;  
4           surrounding the printed circuit board with a metal shield except for the non-  
5           metal connector, the metal shield making physical and electrical  
6           contact with the ground ring.

1           14. The method of claim 13 further comprising:  
2           inserting an electrically conductive gasket between the metal shield and the  
3           ground ring.

1           15. The method of claim 13, wherein surrounding the printed circuit board with a  
2 metal shield further comprises:  
3           covering a top surface of the printed circuit board with a first metal casing  
4           having an opening for the non-metal connector; and  
5           covering a bottom surface of the printed circuit board with a second metal  
6           casing.

1           16. The method of claim 15, wherein covering the top surface of the printed  
2 circuit board further comprises:

3 making electrical contact between the first metal casing and a first perimeter  
4 ground ring circling the top surface of the printed circuit board.

1 17. The method of claim 16 further comprising:  
2 inserting an electrically conductive gasket between the first metal casing and  
3 the first perimeter ground ring.

1 18. The method of claim 15, wherein covering the bottom surface of the printed  
2 circuit board further comprises:  
3 making electrical contact between the second metal casing and a second  
4 perimeter ground ring circling the bottom surface of the printed circuit  
5 board.

1 19. The method of claim 18 further comprising:  
2 inserting an electrically conductive gasket between the second metal casing  
3 and the second perimeter ground ring.